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TOWARDS OPEN BUSINESS MODELS SOME CHALLENGES AND HOW TO OVERCOME THEM

BMOI REPORT

BMOI Report

Towards open business models: some challenges and how to overcome them



Colophon

This report is part of the BMOI project which stands for ‘Business Models for Open Innovation’.

This project aims to generate actionable insights to help firms transform their business model(s) to profit from open innovation. The project applies case-studies and a regional comparison to generate good practices, generic principles, training content, and policy recommendations. Other products of the project are a report describing and explaining differences in openness across sectors and regions and the effect of regional openness on innovative performance based on data from the Community Innovation Survey, a workshop methodology on open business models, and an integrated report with policy implications.

The BMOI project is part of EURIS, which is supported by the INTERREG IVC program financed by the European Union’s Regional Development Fund (ERDF), helping regions of Europe to work together to share experience and good practices in the areas of innovation and the knowledge economy. The three project partners of the BMOI project are: Public University of Navarra (UPNa), University of Stuttgart (USTUTT), and Eindhoven University of Technology (TU/e). Data collection for this report would not have been possible without the generous cooperation of the firms that served as research sites.

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1. Introduction

Nowadays, firms increasingly innovate together with outside parties, such as customers, suppliers, research institutes, and complementors. While some leading firms in technology-intensive sectors, such as Cisco and IBM, are often highlighted as examples of truly open innovators, the innovation process is becoming increasingly open in a wide variety of sectors, and in firms of different sizes. Although initial writings summarised that open innovation is more appropriate in industries that are strongly influenced by globalization, technology intensity, technology fusion, disruptive business models, and knowledge leveraging, more recent research has found a trend towards openness across a wide variety of industries [1, 2].

Although innovating with outsiders is not new, several trends have drawn attention to this phenomenon [3-5]:

- Social and economic changes in work patterns (e.g. increasing labour mobility);
- Increased division of labour due to globalisation;
- Improved market institutions for trading ideas and technology;
- Increased market dynamics and development rate of technology;
- The rise of new technologies to collaborate across geographical distances.

The term ‘open innovation’ was coined by Henry Chesbrough in his book of the same name, released in 2003. The basic idea is that firms are better off crossing their boundaries when innovating. An often used definition of open innovation is: “the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and to expand the markets for external use of innovation, respectively.”[6] The concept of open innovation is often contrasted with closed innovation which refers to firms initiating, developing, commercialising, supporting, and financing innovations on their own account, and not searching for alternative paths to the market for technology.

Open innovation can increase a firm’s return on innovation. For instance, research has shown that open innovation may contribute to revenue growth [7], and the fraction of revenues that could be attributed to radical innovations [8].

An important aspect that sets open innovation aside from other approaches is its strong focus on how firms turn their innovation efforts into revenue. Open innovation requires innovations to be aligned with a firm’s business model. Chesbrough argues that: “Open innovation combines internal and external ideas into architectures and systems that are defined by a business model.”[3: xxiv] (emphasis added) However, insights into the use of business models in relationship with open innovation are scarce [9, 10].

1. Introduction

This report focuses on the interface between open innovation and business models. It aims to provide insight into the challenges of developing and executing open business models, and how firms are dealing with these challenges.

This report adopts the definition of Osterwalder and Pigneur [11], who developed the widely used ‘business model canvas’ tool for discussing and developing business models. These authors argue that a business model is a schematic representation of how an organisation creates, delivers, and captures value.

The main ingredients for this report are 10 case studies drawn from ten established firms in three European regions (Navarre, Stuttgart, and Eindhoven) that have implemented open innovation practices in their business initiatives. The firms discussed are of various sizes and are from different sectors (Table 1, Appendix 1, Appendix 2).

Table 1: Case study characteristics

Firm	Size (small, medium, large)	Industry
(1) Bosch	Large	Engineering and electronics
(2) MechaniCo ¹	Medium	Engineering and electronics
(3) Bodegas Ochoa	Small	Food
(4) Bruns	Small	Exhibition engineering
(5) Ingeteam Energy	Small (but part of larger organisation)	Power plants-equipment design and development
(6) FEI	Medium	Electron microscopes
(7) Kugler-Womako	Small (but part of larger organisation)	Printing and paper processing
(8) Frenos Iruña	Small	Brake systems design and manufacturing
(9) Philips	Large	Electronics
(10) Van Gansewinkel	Medium	Waste management

These data are complemented by academic research on open innovation and business models and documented accounts of a more practical nature on these topics.

The following chapters provide an integrated analysis of the data discussed above. The report is structured as follows. The next chapter outlines the concepts and definitions in use and further specifies the field of inquiry. Then, three types of open business model developments are discussed. Potential challenges and pitfalls are highlighted and possible solutions identified; all illustrated with real-life

¹ MechaniCo is a pseudonym.

1. Introduction

examples. The three types of open business models, their challenges, and the chapters in which they are discussed are presented in Table 2.

Table 2: Overview of types of open innovation and their potential challenges

Type of open innovation	Potential challenges	Chapter
Inbound open innovation to enhance an existing business model	<ul style="list-style-type: none">• Searching• Acquiring and• Assimilating outside knowledge to create and appropriate value	3
Inbound open innovation when establishing a new business model	<ul style="list-style-type: none">• Developing ideas for new business models• Establishing and maintaining connections• Aligning competences	4
Outbound open innovation as new business model	<ul style="list-style-type: none">• De-coupling technological knowledge• Developing alternative value propositions• Establishing new customer linkages	5

In addition to the three chapters mentioned in Table 2 the specific process of open business model development is discussed in chapter 6. Conclusions and a summary of the findings are presented in chapter 7.

1. Introduction

2. Outline of concepts

This chapter further defines the concepts in use and specifies the field of inquiry. The following aspects will be discussed in more detail: ‘open innovation’, ‘business model’, and ‘practices’. In addition it specifies the scope of the report.

2.1 Open innovation

As discussed in the introduction, the overall definition of open innovation can be formulated as follows: “the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and to expand the markets for external use of innovation, respectively.” [6] To make this definition more specific, two main types of open innovation have been identified [4]: inbound and outbound activities (Figure 1).

Inbound activities refer to enriching the firm’s knowledge base through the integration of knowledge, resources, and expertise from external partners, such as customers, suppliers, complementors, and research institutes when advancing technology. Inbound activities are about knowledge exploration by means of sourcing ideas, expertise, in-licensing, and buying patents. Additionally, they refer to the co-creation of innovation through alliances, collaborations, and joint-ventures.

Outbound activities focus on the commercialisation of technical knowledge. They refer to the external exploitation of internal knowledge by transferring ideas to the outside environment. Outbound activities can be established by, for instance, selling and licensing IP, contract research, and involvement in spin-offs. In this way, organisations can commercialise technologies that are ‘on the shelf’ and involve outside parties that may be better equipped to commercialise inventions.

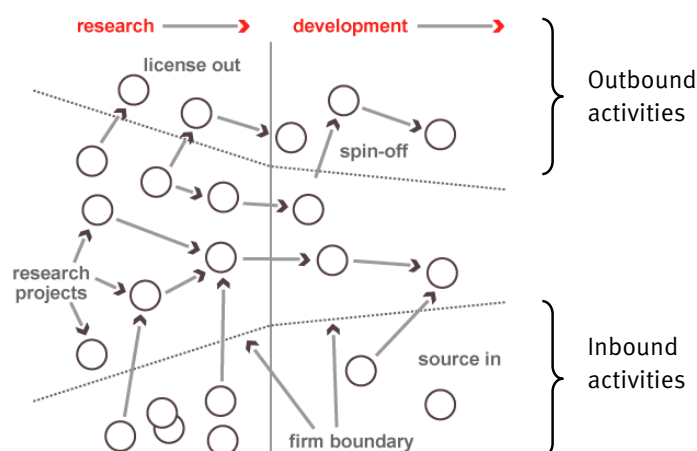


Figure 1: Open Innovation activities (Adapted from Chesbrough [3])

2.2 Established firms

This report specifically focuses on established firms adapting their business models by applying open innovation. This includes small and medium enterprises (SMEs), but also larger firms. We do not include start-ups as case organisations because developing open business models from scratch is a different process than adapting existing business models.

2.3 Open innovation and not ‘open source’ or ‘open science’

This report does not focus on ‘open source’. ‘Open’ in Chesbrough’s sense, which is the focus of this report, refers to the organisation’s borders being permeable, allowing ideas and competences to flow in and out. It is about companies trying to innovate by reaching outside their walls. The problems to be resolved, or the opportunities to be addressed are ‘owned’ by the firm, and a focal firm is the centre of the collaboration. Open innovation collaboration is mainly transactional or contractual: something is provided on the promise of receiving something in return. In contrast, open source software or open science refers to information commons that are free from intellectual property constraints and so open to all [12]. In open source, or open science, the problem or opportunity in itself is the central point and not the firm. In this case, individuals and organisations all connect to each other rather than working through one central organisation. Hence, open innovation and open source/science are different practices that have different purposes.

2.4 Business model

There are different ways in which the term ‘business model’ is used. However, all uses of the term have several things in common [13]:

- The concept of value is central. The business model describes how organisations create and appropriate value.
- The business model often extends beyond the firm and includes partnerships with other organisations.
- Business models involve a holistic or systematic perspective (as opposed to a particularistic and functional perspective). The business model can be viewed as a system made up of components, linkages and dynamics. The business model involves simultaneous consideration of the content and process of doing business.
- Many authors, implicitly or explicitly, identify activities, performed either by the focal firm or by any of its suppliers, partners, or customers, as part of their conceptualisation.

Several descriptions of business models exist, such as Chesbrough and Roosenbloom [14], Amit and Zott [15], Morris et al. [16]. In this project, Osterwalder’s framework is adopted, mainly because of its level of detail and because it is well-known. From 2004 onwards, this conceptualisation has been applied around the world, through writings and consultancy, resulting in the book *Business model generation*, written by Osterwalder and Pigneur [11], discussing the business model ontology (named ‘canvas’ by the authors), design strategy and design process.

A business model describes the rationale of how an organisation creates, delivers, and captures value. The authors describe the business model through nine components that cover the four main areas of business: customers, offer, infrastructure and financial viability (Figure 2):

2. Outline of concepts

- Value proposition(s): Describes the bundle of products and services that create value for specific customer segment(s).
- Customer segment(s): Describes for whom the firm creates value and who are the most important customers.
- Channel(s): Describes how a company communicates with and reaches its customers to deliver a value proposition.
- Customer relationship(s): Describes the type of relationship(s) a company establishes with specific customer segments.
- Revenue stream: Represents the cash a company generates from each customer segment and the way it generates this revenue stream.
- Key resources: Describes the most important assets required to make a business model work. They can be physical, financial, intellectual, or human. They can be owned or leased by the company, or acquired from key partners.
- Key activities: Describes the most important things a company must do to make its business model work.
- Key partnerships: Describes the network of suppliers and partners that make the business model work.
- Cost structure: Describes all costs incurred in operating a business model.

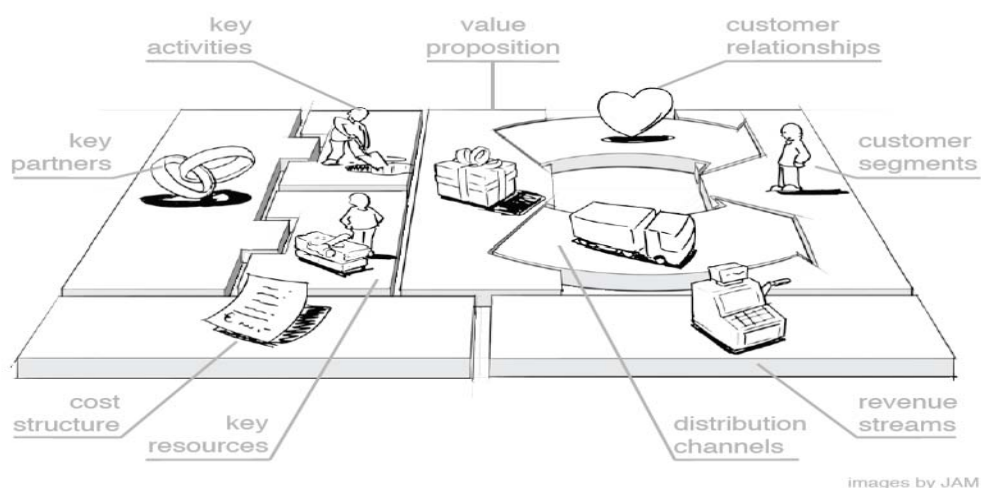


Figure 2: Business models canvas[11]

A business model is viable when all its elements are designed in such a way that the revenue essentially outweighs the costs.

Below, the conceptualisation is applied to Nestlé's 'Nespresso' business model (Figure 3), which is built around premium coffee machines and coffee capsules (adapted from Osterwalder and Pigneur [11] and <http://businessmodelsinc.wordpress.com/>).

2. Outline of concepts

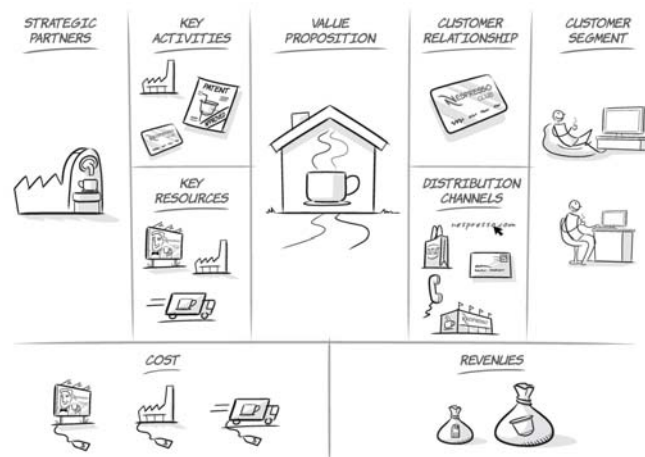


Figure 3: Business models canvas for the Nespresso business model

- Value proposition: high end restaurant quality espresso at home.
- Customers: households, office market.
- Channel(s): web channel, Nespresso boutiques (store in store).
- Customer relationships: Nespresso club.
- Revenue stream: main revenue by selling capsules, other revenues by selling machines and accessories.
- Key resources: distribution channels, patents on the system, brand, production plants.
- Key activities: marketing, production, logistics.
- Key partnerships: coffee machine manufacturers.
- Cost structure: manufacturing, marketing, distribution, and channels.

2.5 Practices

For this report, the analyses focused on identifying, describing, and analysing challenges when putting open business models into operation. Additionally the study aimed to identify describe and analyse central practices at the intersection of business models and open innovation by which these challenges were addressed. This report is structured around the processes and practices which make up the activities performed by organisations to put open business models in practice. Although the study has been informed by existing research on open innovation, these processes and practices mainly result from data analyses.

3. Inbound open innovation to enhance an existing business model

Inbound open innovation is often used to enhance existing business models. In most cases ‘enhancing’ refers to improving an existing value proposition. This chapter focuses on the practices used to overcome three challenges in the specific situation of applying open innovation to enhance a firm’s existing business model.

After introducing this specific type of open innovation, this chapter focuses on the following three challenges:

- *Searching for resources and competences from (potential) partners;*
- *Acquiring them, and*
- *Assimilating them to create value.*

These challenges are introduced and approaches are discussed to overcome them. With regard to these challenges, specific attention is paid to the ‘not invented here’ syndrome.

3.1 Enhancing an existing business model with inbound open innovation

In several instances it was observed that a firm’s existing business model was opened up by infusing it with external resources and knowledge to be used for innovation activities. In these cases an existing business model was adapted by enlarging the ‘key partnerships’ component. In turn, external resources and knowledge were used to innovate, and create and deliver additional value within the boundaries of a non-changing value proposition and customer segment (Figure 4).

3. Inbound open innovation to enhance an existing business model

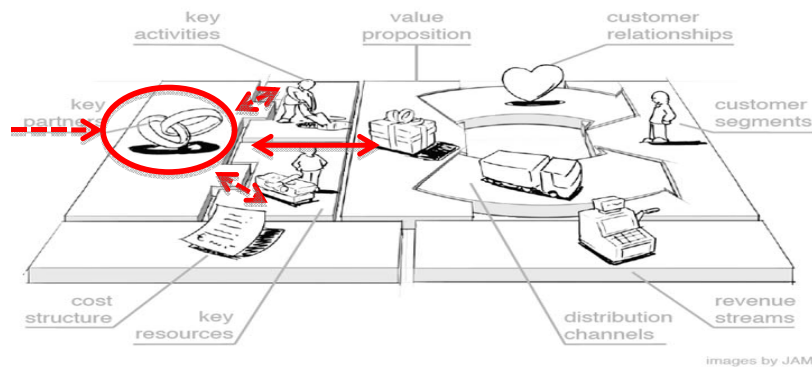


Figure 4: Enhancing an existing business model

Three of the cases specifically fit this situation: Bodegas Ochoa, Bosch, and MechaniCo. In the case of Bodegas Ochoa the organisation opened up its gastronomic products business model which, until then, consisted of wines and verjuice. By partnering with an olive tree nursery, a new variety of olives was able to be developed, which could be used to produce a distinctive type of extra virgin olive oil to complement their current product portfolio, enhance the overall value proposition and increase the value offered to existing customers. In the case of Bosch, the organisation wanted to open up its business model by looking for partners with complementary technology that could supplement the Bosch' technological portfolio with regard to enhancing the value propositions of several businesses. In this case, opening up was part of a 'make-or-buy' decision. In the MechaniCo case, it was observed that the organisation further opened up their current business by implementing an independent department for creating and managing a partner network, which could lead to innovations and an updated product portfolio with more value for existing customers.

3.2 Searching

When opening up an existing business model, the first step is to identify external sources of innovation to add to, or complement the firm's internal knowledge and competence base. Specific sources of external knowledge and competences include suppliers, customers, competitors, complementors, universities and knowledge institutes.

While it may seem straightforward to identify innovation and business model partners, this involves investment. For instance, firms are often confronted with search costs. However, the use of information and communication technologies and the Internet to enable searches, such as using online communities, crowdsourcing, blogs and virtual worlds have increased search efficiency and lowered costs.

Research has found that there are limits to search effectiveness. For instance, an influential study by Laursen and Salter [8] has identified that firms which rely on a wide variety of external partners for innovation suffer decreasing returns with regard to innovation performance. These authors find that a medium level of different and/or highly important partners has a better effect than a large number.

Several measures may support the search for suitable external partners when opening up business models. Instead of firms searching by themselves, third parties, such as innovation intermediaries, may assist in the search for external partners. These intermediaries are open innovation service providers that provide platforms that connect seekers and providers of knowledge and competences and assist in search processes (Example 1).

3. Inbound open innovation to enhance an existing business model

Example 1: Innovation intermediaries at Bosch

Robert Bosch GmbH (Bosch) is a leading international technology and service company. Its business sectors are divided into automotive engineering, industrial engineering and consumer goods and building technology. According to preliminary figures for 2011, the three sectors generated a turnover of €54 billion, of which 8% is reinvested in research and development. The head office is situated near Stuttgart (Germany).

Due to its high degree of diversification, the company has adopted several business models. In general, Bosch offers its customers products that correspond to the latest technologies. The resources and competences needed for technology development processes are mainly developed internally.

In 2009, Bosch started opening up several of its existing business models. The organisation aimed at searching for external partners to gain access to complementary technologies. Intermediate organisations were sought to support the process and to look for potential solutions to solve internal development problems and to supplement its own competencies. The aim was also to find out how advanced the practical 'state of the art' in specific technology areas was, in order to decide whether Bosch should invest in research and development, or if it was more appropriate to buy already existing knowledge. Hence, the initiative was triggered by a strategic 'make-or-buy' decision.

Implementation milestones:

- 2009: The interest in crowdsourcing by means of intermediate organisations for innovation purposes gains a foothold in the organisation.
- End of 2009: Identification of two technical development problems as test-cases and analyses of two intermediate platforms, NineSigma and Yet2Com, to be used in the pilot.
- First half of 2010: Development of an extensive legal framework, which had the potential to be re-used in further initiatives.
- July 2010: Workshop with intermediaries to structure the problem on an abstract level.
- Mid 2010-Mid 2011: Abstract problems were distributed via the intermediaries. After stopping the pilot in mid-2011, no usable solutions were found. However, Bosch felt the use of intermediaries to scan the environment offered a quick overview of a certain research field and potential technology providers.
- 2012: Working with innovation intermediaries to find potential technology partners is regarded as a standardised tool within the company.

Management of the initiative:

The pilot project was clearly communicated. Necessary resources, such as employees, and budget, were provided centrally as the project was a pilot project and the benefits could not be estimated fairly. Future applications of this approach will be financed by the respective research departments and businesses. Twenty employees were involved in each pilot project. However, these employees did not operate exclusively in these projects and were called upon when necessary. The responsibility for the projects was set centrally. The two problems had their own project manager, named by the platforms. A student supported the entire initiative on the administrative side.

Additionally, firms can develop platforms that enable potential partners to produce and share knowledge that is useful for the firm, such as 'innovation toolkits'. Toolkits for innovation allow firms to interact with (potential) customers and overcome the knowledge transfer gap because conversations between customers and manufacturers are based on discussing a user's preliminary designs. These toolkits are specific to a given product or service type. Within a certain context, they give users the freedom to innovate, allowing them to develop their custom product via iterative trial-and-error of components. User

3. Inbound open innovation to enhance an existing business model

toolkits have been shown to be applicable in product innovation in fields ranging from electronic circuitry to Apache security software [17].

Also, firms may increase their efficiency in screening and filtering potential partners by developing gatekeeper roles and departments, which consist of employees with the specific role and processes of strategically thinking about innovation possibilities and finding and screening potential business model partners (Example 2).

Example 2: Gatekeeping at MechaniCo

The German pneumatic and electrical drive technology provider MechaniCo was founded in 1925. Currently, MechaniCo offers around 30,000 products and serves 300,000 customers in a wide variety of branches and countries. MechaniCo does not only provide single components but also tries to enhance customer benefits through product-service combinations. In 2011, the organisation generated a turnover of around €2.1 billion and employed 15,500 people.

In order to achieve high levels of innovation and increase innovation potential, MechaniCo aims to cooperate with external partners within publicly funded research projects. Although this idea originated in the 90's, it has recently intensified.

At the beginning of the European Union's Sixth Framework Programme in 2002, MechaniCo realised that new emerging thematic fields did not coincide with the relevant research profile for MechaniCo, which resulted in the decision to be more actively involved in defining research priorities and looking for partners in the Seventh Framework Programme, which started in 2007.

An important measure that supported this strategy was the introduction of a central network and cooperation management department, which was set up to organise and coordinate systematic processes to participate in research projects. The administrative and preparatory activities were pooled centrally and an interface was created between the external research world and the internal expert world at MechaniCo.

The idea for setting up this gatekeeping department came from the company's senior management. The funds came from the central research department. At the moment, the success of the initiative is hard to measure. However, for now, senior management is convinced of its value and wants to expand it internationally.

3.3 Acquiring

Another important and challenging step when infusing existing business models with outside knowledge and competences is acquiring the outside resources and competences. In doing so, firms have to find the means to support knowledge transfer. Additionally, acquisition is often based on negotiating explicit contracts and licensing agreements. Hence, the costs relating to acquisition have to be taken into account when analysing the business model (Example 3).

3. Inbound open innovation to enhance an existing business model

Example 3: Paying intermediaries at Bosch

To open up its business model, search for, and collaborate with intermediary platforms and external partners, Bosch had to spend a certain amount of money. The costs related to the conclusion of a legal agreement were centrally financed. Further project specific costs, incurred for the outsourcing of resources and competences, are paid by the project itself. The Bosch experience is that the cost of the platform services, preparation and post-processing, plus the costs for IP-usage are almost as high as funding its own research projects.

The intermediary platform receives further funding in terms of an intermediation commission. This part is dependent on the trilateral contractual relationship, concluded in advance between Bosch, the platform and the company which is able to offer a solution.

On the other hand, when trying to acquire the knowledge and technology related to projects carried out by or in partnership with external agents, it is obvious that the relationship with these agents becomes a capital issue; thus, building confidence within partnerships is a very important aspect to be taken into consideration to guarantee the success of the acquisition process (Example 4).

3. Inbound open innovation to enhance an existing business model

Example 4: Building confidence with partners at Bodegas Ochoa

Bodegas Ochoa is a family enterprise located in Olite (Navarre) and one of the oldest wine producers in Navarre (with a history going back over 6 centuries). In 2010, the firm had a turnover of nearly €3 M and 17 workers. From 2000, the winery spotted the chance to broaden the range of product offerings and enhance its business model through the production of olive oil. Previously, it had been producing a special condiment for food, called *verjuice* which is extracted from grapes, alongside wine. So the original 'wine' business model had been further developed into a 'gastronomic products' business model several years before.

The main idea behind the decision to produce olive oil was to enhance the gastronomic element in order to give a higher value to its direct clients (the distributors) and have more resources to reach the final consumers. Also, this opportunity perfectly matched the desire to make better use of the resource (the land), that was being used for the cultivation of cereals, not a profitable activity.

Thus, in 2003, Bodegas Ochoa started its first plantation of olive trees, in close collaboration with Agromillora (a plants nursery with whom the winery had been working before with regard to its wine products) and with funds provided by the CDTI (a public company dependent on the Ministry of Economy of Spain). The first harvest took place in 2006, and then the commercialisation of olive oil began.

The first plantation of olive trees gave both partners the chance to test the *aberquina* olive variety, the specific trees that were being nursed by Agromillora, and also a new process for cultivating of the olive trees.

After the first plantation and the first harvest, the partners decided to create an experimental plantation on another piece of land owned by Bodegas Ochoa, in order to develop and test new varieties of olives. This project is currently in progress. Both parties are highly interested in its results.

In short, within this partnership, in which the partners are perfectly suited, the enhancement of the Bodegas Ochoa business model gave both collaborators the chance to experiment with and develop new business opportunities. The mutual trust, forged through several years of working together, is the reason why this partnership offers such interesting benefits for both partners.

3.4 Assimilating

After searching, acquiring and building confidence, an important step for inbound activities is assimilating and using the new knowledge for commercial ends. Only when external knowledge and competences are integrated into the existing business model, can a firm fully profit from open innovation.

For assimilation to be successful, a firm should overcome the 'not invented here' culture that may be present among employees. The 'not invented here' culture refers to an organisational state in which employees of the focal firm have negative attitudes towards knowledge gained from external organisations [18]. They simply don't want to assimilate knowledge from external sources because they see it as inferior to inventing something on their own. Specifically, firms with a history of feeding business models with highly successful internal inventions often have to overcome cultural barriers and transform a 'not invented here' culture into a culture of 'proudly found elsewhere' for successful assimilation.

3. Inbound open innovation to enhance an existing business model

To some extent, firms can enforce this change by adapting their incentive systems. For instance the consumer products firm Procter and Gamble has set up incentive systems to reduce the not invented here culture by demanding that a certain percentage of the firm's innovations should include knowledge gained externally [9]. Furthermore, additional benefits may be uncovered that extend beyond the original purpose of researching to include new knowledge that increases the acceptance of collaboration (Example 5).

Example 5: Discovering additional benefits at Bodegas Ochoa

When Bodegas Ochoa decided to produce and commercialise olive oil to set a stronger value proposition, the collaboration with the olive tree nursery, Agromillora, was a key factor in the development of the process. The firm was able to access resources to enhance its business model thanks to this partnership.

Moreover, when the olive trees plantation became a reality and co-existed with the vineyard, it was noticed that additional benefits could be realised when combining both plantations. It was decided to acquire new harvesting machinery (despite continuing to share this resource with other wineries, as it had been doing previously) that was fit for both the vineyard and the olive trees. This decision was taken only after the plantation of the latter was considered to be profitable enough. Hence, additional benefits could be realised beyond accessing necessary knowledge.

Also, the firm carries out a number of joint projects with the Public University of Navarre (UPNa), in which the first party validates the research performed by the second party. These projects, which relate to the measurement of water stress and green covers, are being developed for both the olive trees plantation and the vineyard.

In addition to culture, a lack of specific integration competences may also hinder the assimilation and use of external knowledge. To develop high levels of knowledge transformation and exploitation, it is important that gatekeepers are not kept isolated within the organisation but are highly integrated and connected with others. An important mechanism for enhancing integration is developing cross-functional interfaces, such as liaison personnel and teams, between gatekeepers and the rest of the organisation. These mechanisms can overcome differences in knowledge interpretation and build understanding about new external knowledge. Additionally, they may facilitate developing a fresh perspective on how resources and competences are integrated and support new product and service development. Furthermore, cross-functional interfaces are well suited to generating commitment and implementing decisions that are broadly supported (Example 6).

3. Inbound open innovation to enhance an existing business model

Example 6: Cross-functional interfaces at MechaniCo

At MechaniCo, efforts were made to enable knowledge assimilation, moving beyond the central network and cooperation management department. The new department was set up as part of the overall R&D department to develop cross-functional interfaces and secure knowledge integration. Additionally, several senior managers were involved in the initiative so knowledge assimilation could occur via the hierarchy of authority.

As a result, the outcome of research project participations have been used in different MechaniCo departments for different purposes such as, for instance, product/service concepts, hardware/software/service developments and marketing/image purposes.

4. Inbound open innovation when establishing a new business model

Inbound open innovation is also used when establishing a new business model. This chapter focuses on practices that were used to overcome three challenges in the specific situation of using open innovation when developing a new business model².

After introducing this specific type of open innovation application, the following three challenges and approaches for overcoming them will be discussed:

- Developing ideas for new business models;
- Establishing and maintaining connections, and
- Aligning competences.

4.1 Applying inbound open innovation in business model renewal

In the case of business model renewal, a firm develops a new value proposition and a new group of customers.

To implement new value propositions, organisations have to develop new bundles of resources and competences. In developing these bundles, firms often combine individual resources from business models already in operation with resources and competences that are newly developed, and resources and competences brought in by working with external partners. Firms tapping into resources and competences that are owned by partner firms thus apply inbound open innovation in their business model renewal efforts.

Developing new business models may be relevant due to different reasons and developments [11, 19, 20], such as:

² Although the general inbound open innovation challenges presented in chapter three also apply to developing new open business models that use inbound open innovation, it was chosen to present the three challenges specific to this situation.

4. Inbound open innovation when establishing a new business model

- Emerging commercial opportunities that require new ways of doing business;
- Existing business models losing their effectiveness due to changing customers preferences;
- New entrants or existing competitors developing completely new ways of meeting customer demands.

In the cases presented in this chapter, inbound open innovation is applied together with developing new value propositions, customer segments and bundles of resources. So, instead of mainly adapting the 'key partnerships' and 'value proposition' elements when applying open innovation, the overall business model is renewed. An exemplar situation is presented in Figure 5.

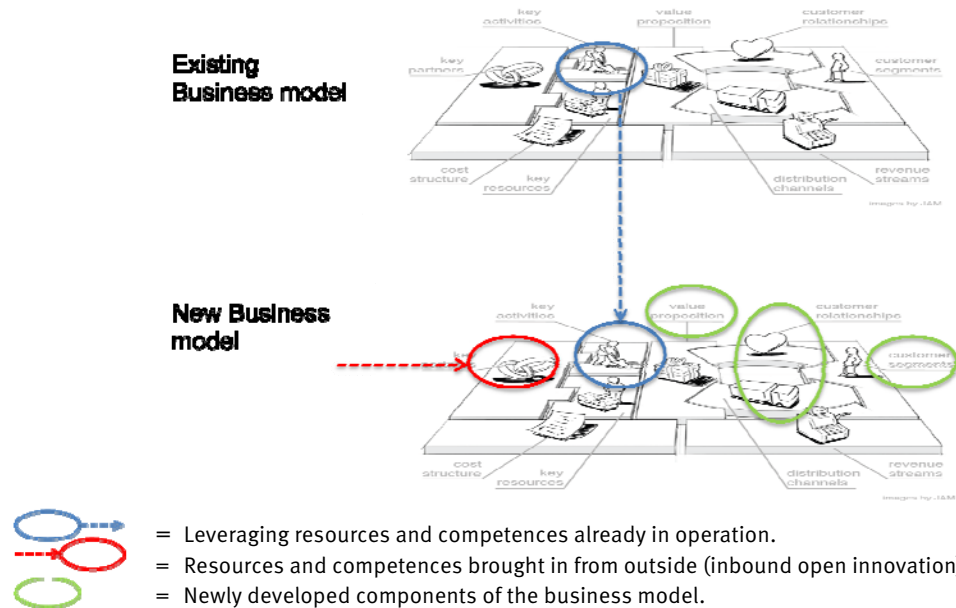


Figure 5: Establishing a new business model

4. Inbound open innovation when establishing a new business model

Several of the case studies fit this specific situation: FEI, Bruns, Ingeteam Energy, Frenos Iruña and Kugler-Womako (Table 3).

Table 3: Cases discussed in this chapter

Case	New business model	Inbound open innovation
FEI	Developed a new business model to commercialise a low cost scanning electron microscope.	Working together with two external partners who were able to provide the manufacturing and software competences to develop the new value proposition which allowed implementation of the new business model.
Bruns	New business model to bring low cost standardised museum exhibits to the market.	Working together with a design agency to secure design and marketing competences. Additionally, clients of the original business model were included as co-designers in the new business model.
Ingeteam Energy	New business model to bring more standardised products to the market.	Working together with several university partners when implementing the new business model.
Frenos Iruña	New business model to offer brake systems to the wind-power sector.	Working together with a technological centre that provided the test bench to verify prototype products in the new business model.
Kugler-Womako	New business model to commercialise a new machine to produce wire mesh for the automotive industry.	Working together with a new customer operating in the automotive industry as co-creator.

4.2 Developing ideas for new business models

Developing ideas for new business models within an established firm can be difficult and more challenging than enhancing an existing business model. A firm's existing business model(s) may form a barrier to developing new ideas. Business models already in operation create an internal logic for how value is created and appropriated [3, 19]. This creates an environment in which new opportunities are evaluated in the light of this dominant logic. Often, this is an unconscious process which suppresses the development of ideas for business models that move away from original ones. Furthermore, existing power relations and politics might hinder business model renewal. As Chesbrough notes: "A vice president of a field sales organisation, for example, might take strong exception to experiments with online sales of the same products, whether they are successful or not." [21: 358]

CEOs and general managers might be best positioned to develop ideas for new business models and stimulate their development because business model renewal requires an overarching perspective considering linkages between competences such as marketing, R&D, manufacturing, and finance. Idea development may benefit from bringing in leaders from outside the organisation. These can bring a fresh perspective and are less tightly linked to existing business models (Example 7). Additionally, idea development can be accelerated by existing leaders reinforcing open minded attitudes within their organisations (Example 8).

4. Inbound open innovation when establishing a new business model

Example 7: New CEO as impetus for a new business model idea at Bruns

Bruns is a production and engineering company for exhibitions in museums, information and science centres and a creator of presentation models and blow-ups. It is organised around projects in which the organisation closely works together with customers and design agencies. In 2010, Bruns had a turnover of almost €11 M and had around 70 employees. Bruns' headquarters are based in Bergeijk (the Netherlands).

Bruns was founded by Hans Bruns in 1963. In 1999, Hans Bruns retired and sold the company to outsider Jan Burgmans. Under the leadership of Burgmans, Bruns increasingly participated in larger tenders and projects. As well as increasing growth opportunities, this also increased risk. Miscalculation of these larger 'one of a kind' projects could have a serious negative impact on the company's bottom-line and the senior management team was looking for ways to increase income predictability and spread risk.

This led to the idea for the new Exhibits.nl business model. The plan was that Exhibits.nl would sell exhibits for which the idea was already developed and the product was already manufactured by operating the original Bruns business model. Instead of engineering, producing, and delivering interactive tailor-made exhibits with extensive after sales service and project management responsibilities, the new business model was focused on delivering standardised, simple, and shockproof exhibits, with limited after sales service. Implementing this new model alongside the customised original model resulted in the spreading of risk and getting more out of existing designs.

4. Inbound open innovation when establishing a new business model

Example 8: The importance of leadership at Frenos Iruña

Frenos Iruña has its headquarters in Navarre (Spain). It was founded in 1956 and its workers took ownership in 1980. In 2010, the firm had a turnover of €8 M and had around 60 workers. Traditionally, Frenos Iruña has been devoted to the automotive sector, designing, developing and producing brake system components for automobiles and other vehicles.

The company has been through several critical impasses during its existence. In the late eighties, the current manager arrived at the company and, ever since, he has kept the firm in a constant process of renewal so it has been able to overcome every crisis and, moreover, foresee opportunities for growth and take full advantage of its capabilities.

In 2008, Frenos Iruña took part in the Euroinnova Navarra Programme to promote sectoral and regional cooperation and the integration of regional innovation system agents (universities, technological centres and companies) within European networks. The programme gave the firm the chance to make its first contacts to enter the wind power business. This new sector was seen as an extremely interesting opportunity by the manager of the firm which drove the efforts of the company towards the diversification of the business. The diversification was further enabled by committed workers who were owners of the business and embraced opportunities to further secure consolidation of the firm.

This way, Frenos Iruña entered the wind power business by designing and producing brakes for wind turbine manufacturers and started a process of implementation of a new business model that involved making relevant changes at several levels.

Also, developing new business models and abandoning old ones does not happen overnight. In many cases developing a new model requires a certain time of co-existence between original business models and the emerging new model. Therefore, general managers frequently have to share attention which often results in the new models receiving too little attention. Smart organisational solutions may solve this problem. Organisations may, for instance, organise new business functions or departments which operate somewhat outside the mainstream organisation that have the authority and purpose to implement new models. This way organisations may become ‘ambidextrous’ [22] and combine new and old business models and so respond to environmental change and new opportunities (Example 9).

4. Inbound open innovation when establishing a new business model

Example 9: New business development at FEI

In its current form, FEI is a public limited American supplier of electronic microscopy tools, and operating and application software for researchers, developers and manufacturers working to characterise, analyse, and manipulate structures on the nano-scale. The organisation is a result of a merger between FEI Company and Philips Electron Optics in 1997. In 2010, the organisation employed 1,788 people, had a turnover of \$634 M, and a profit of \$54 M. FEI's headquarters are located in Hillsboro, Oregon. Its European office is located in Eindhoven (the Netherlands).

Traditionally, FEI offers high end microscope systems with an average selling price of \$1 M, targeted at leading nano-scale research institutes, national laboratories, and companies. The idea for the new business consisted of a smaller table-top electron microscope, the Phenom, focused on ease of use in a manufacturing area between optical microscopy and the simplest traditional FEI microscope at that moment, targeted at schools and companies that do less sophisticated research.

<i>Traditional FEI microscopes</i>	<i>Phenom</i>
Magnification up to atomic levels	Magnification up to 20,000 times
Relatively expensive	Relatively cheap
Can only be used by experts	User-friendly
Service engineers that visit the customer	Remote, low cost, service system via Internet
Large	Small

While the original idea for the table-top microscope emerged from technical developments in miniaturisation executed by the R&D department, the business model idea was developed by a business developer and a small team that were, for the most part, differentiated from the mainstream organisation. In this way, they were able to focus on developing the new business model without having great responsibility with regard to the original business model. Senior management invested in this new business team because they wanted to gain advantages from nanotechnology penetrating smaller, less research intensive organisations, resulting in the need for increased magnification in these segments. Additionally, they wanted to penetrate new markets because the main market for the traditional business model was the highly cyclical semiconductor market, leading to unwanted swings in income.

4.3 Establishing and maintaining connections

When developing a new business model alongside existing ones, external partnerships may be very important in implementing the model. In contrast to enhancing an existing business model, in which a business model is already executed, a lot of new business models would not have been put into operation without partnerships. These may decrease the development costs and risks of new business model development. However, because partners often fall outside the legal boundaries of the focal firm it is important to invest in establishing and maintaining good connections, which may be challenging.

But what are good connections? It appears that partnerships in which the partners have a certain overlapping knowledge base outperform partnerships that do not have any common ground [23]. Even though competence discrepancies are the foundation of partnerships [24], such transfer is not guaranteed unless common knowledge and learning skills are present (Example 10).

4. Inbound open innovation when establishing a new business model

Example 10: Competence fit at Ingeteam Energy

Ingeteam Energy is a private company with 91 employees and €90 M in annual sales. The company is part of Ingeteam, a market leader specialising in electrical engineering and the development of electrical technology. The company has its headquarters in Navarre (Spain).

The organisation's traditional business model, which was put into operation at the start of the wind power industry in the early nineties, is focused on development and sales of electronic systems for wind turbines in close collaboration with a small group of clients. Hence, products are highly customised. Within this business model, R&D and manufacturing are key competences.

Ingeteam Energy started implementing a second business model from 2009 onwards. In sync with the maturing nature of the wind power industry, this business model was based on selling standardised proven products and components to a wider range of customers from different parts of the world, with less intensive customer interaction. While R&D and manufacturing are still important for operating this business model, marketing and supply-chain competences have become increasingly important in this new model.

Within the new model, Ingeteam Energy works closely with universities and knowledge institutes for R&D purposes. In this relationship, Ingeteam Energy receives R&D services and gives monetary incentives and field test results in return. Because the university takes care of the on-going supply of new workers, and Ingeteam Energy researchers may work at university premises for some projects, both partners have built an overlapping knowledge base over time, which has resulted in a solid and mutually beneficial partnership.

A case in point is the relationship between Ingeteam Energy and INGEPER (a research group from the Department of Electric and Electronic Engineering at the Public University of Navarre). Together, they have developed joint R&D projects, the results of which have been of great value for the implementation of the Ingeteam Energy new business model. On the other hand, the chance to participate in projects together with Ingeteam Energy has given the research group the opportunity to define and direct its research lines towards aspects of great interest, due to the specific problems that arise in the everyday work of the company.

In addition to competence fit, monitoring strategic fit is important. Firms may enter partnerships for different reasons. It appears that partnerships work out better when there is goal correspondence between partners with regard to the partnership. This does not mean that partners share exactly the same goals, but that goals are non-conflicting and have a similar level of importance [25] (Example 11).

4. Inbound open innovation when establishing a new business model

Example 11: Strategic fit at Kugler-Womako

The Kugler-Womako machine company currently has 94 employees and operates from Nürtingen (Germany). In 2011, the company had a turnover of €21 M and invested about 5% of turnover in R&D.

The traditional business field of the organisation is developing production lines for security documents, mainly passports. Furthermore, the company's portfolio includes other machines targeted at the printing and paper processing industry, such as binding machines for wire comb, spiral and plastic binding, as well as sheeters for wet glue applied labels, transparency films and other special papers.

In developing their new business model Kugler Womako partnered with Rhodius, a supplier of automotive components.

Kugler Womako realised that the future of security documents in paper layout was rather uncertain. Emerging chip technologies and the constantly increasing security concerns of politicians could push market requirements in a direction in which Kugler-Womako could lose market share. By chance, representatives from Kugler Womako met people from Rhodius at a trade-fair. Rhodius was interested in Kugler-Womako's capabilities, and Kugler-Womako realised that this opened up diversifying possibilities to develop and sell a product which was fully independent of the paper and printing industry. Hence, the potential cooperation with Rhodius could become of strategic importance. Likewise, Rhodius realised that Kugler-Womako's technology and machines were able to produce a far better wire-mesh than was currently in use. On top of that, Kugler-Womako's machine was more efficient. This could result in a large competitive advantage for Rhodius. Consequently, the potential cooperation was of strategic importance for Rhodius as well.

A third aspect worth considering is relational fit. It appears that compatible cultures lay the groundwork for collective behaviour and enhance the ability to overcome conflicts. Closely related is the benefit of having a similar attitude and willingness to adapt the nature of the relationship. Partnerships and the methods for value creation and appropriation may evolve in ways that are hard to predict. Therefore, focusing on setting up partnerships often has less impact on success than a common perspective of the adaptability of the partnership (Example 12).

4. Inbound open innovation when establishing a new business model

Example 12: Partnership adaptation at Bruns

To implement the new ‘standardised exhibits’ business model at Bruns, the organisation had a strong partnership with a design agency. When developing the new business model, the partnership with the design agency was entered into to lower risk. It was thought that the design agency could bring re-design and marketing competences to the table and therefore the partnership decreased the cost of investment. In return, the design agency received 50% of the revenue from the products sold via the new business model. Hence, Bruns itself could only appropriate half of the value created through the new business model.

The design agency was well known to Bruns and both partners had done successful business in the past. As the commercial director of Bruns put it: *“throughout the industry our collaborations were known and it was not strange that we partnered up to implement Exhibits.nl”*. There was a strong relational fit between the two parties.

When the new business model had been running for a while, and Bruns had built a certain portfolio of standardised exhibits, it appeared that the re-designing competence had become less valuable to the execution of the model. Additionally it appeared that the design agency’s marketing competences did not fit the target market. Hence, both parties experienced that the partnership had become less useful, while at the same time the design agency kept receiving 50% of the revenue. This situation led to Bruns buying out the design agency and gaining full ownership of Exhibits.nl, receiving 100% of the revenue. Because of the good relationship, this business model adaptation happened without major disputes between the partners. Currently, both parties still collaborate in projects as buyer and supplier.

4.4 Aligning competences

The business model should be looked upon as a system of interrelated components. To achieve satisfactory performance levels, the alignment of components should demonstrate coherence. Each component of the business model affects and is affected by other components. Therefore, a business model has to demonstrate ‘fit’: a complementarity between elements. Misfits may lead to unfavourable performance. For instance a business model build around a product with low quality and low margins has limited fit with targeting a niche market with customers that favour intensive relationships and superior quality.

While this may sound obvious, designing business models with good fit often appears challenging in practice. Specifically when business models are new, their design comes with high levels of uncertainty and ambiguity. In these situations, managers cannot, and do not evaluate all varieties of interrelated systems in advance.

Sometimes managers are overly-focused on a single business model component. In other instances, they may totally overlook important business model elements. Also, they may have an overly optimistic perspective on the usefulness of certain competences across business models, or the use of partners’ competences. As a result, they may implement business models that show limited coherence between components. For instance, in the early 80s, many businesses invested in flexible manufacturing systems (competences). However, these investments were not complemented by focusing on increased product variety (value proposition) and training for employees (competences). The combination of these choices resulted in a misfit between product strategy and manufacturing strategy, which led to a performance decline when compared to firms that kept a traditional configuration, not adapting manufacturing competences [26].

4. Inbound open innovation when establishing a new business model

One way to cope with the reality of limited cognitive abilities of managers is to construct ‘off-line’ maps of business models [21]. This way firms may conduct deep studies of the wide variety of aspects underlying the mechanisms of alternative business model configurations before committing to large investments. Maps also may be used as ‘boundary objects’ to bridge interpretation differences between the stakeholders involved in business model innovation. A starting point may be to extensively map the organisational structure (Example 13) or develop a business modal canvas.

Example 13: Mapping the organisational structure at Frenos Iruña

Over the last few years, Frenos Iruña has experienced a process of continuous and ambitious renewal in order to build a solid firm that can not only overcome potential threats, but also deal with new and profitable projects and take advantage of new market opportunities.

At the organisational level, the firm has dealt with fundamental changes to its structure as, since 2000, it has decided to experiment with an organisational structure based on the concept of *mini-factories* or Value Generation Units (UGV). This has involved changing into a flatter structure, breaking the departmental organisation and aligning staff and the activities around the different UGV's. That is to say, the UGV's were conceived to deal with the whole value generation chain, from the request being made by a client until the satisfaction of that request, going through supply and production processes. The staff not directly attached to one of the UGV's (administration, marketing, human resources) is in charge of their support. The UGV's were organized according to the family of products they were dealing with (e.g. boosters, callipers, pumps), and each of them was made up of a manager, a technical team (quality, design and supply) and a manufacturing team. This organisational change helped the firm to improve its design and manufacture processes and to enter the wind power industry with a new business model. In turn, this triggered a re-focus on the commercial area, as it became more and more important to establish a structure that could guarantee the detection and satisfaction of clients' needs, and the intensification of the relationship with each of them. To deal with this challenge the organisation implemented five divisions, each of them in charge of a different business line: automotive, off-highway, wind power, foundry, and after market.

After the introduction of the divisions-structure, the main challenge for the firm has been to find a fit between the structure and the UGV's, a goal which Frenos Iruña is currently still working on. In any case, there is a clear strategic approach for this new structure, and the firm is convinced that this is the way to success. The aim is to build a perfect fit between the reality it faces (with the co-existence of different business models) and the organisational structure.

Although ‘off-line’ mapping may be quite useful, especially in the early phases of business model renewal, it cannot replace ‘on-line’ experimentation. When conducting real-life experiments with new business models, firms should aim for as real situations as they can get. Experiments should include real customers and real economic transactions insofar as possible [27]. In these experiments, firms should constantly balance costs and depth of the learning experience. Many successful new business models are the result of cumulative learning from a series of failures [20] (Example 14).

4. Inbound open innovation when establishing a new business model

Example 14: Experimentation at FEI

FEI used experimentation when commercialising the table-top electron microscope and operating the new business model. First, when developing the business model the project team experimented with the value proposition. They roped in several potential customers to test prototype products at reduced costs to fine-tune the value proposition. Additionally, it was decided to first focus on the Netherlands, Belgium, and a part of Germany to fine-tune the business model before moving to other parts of the world.

This first phase of experimentation revealed that the target market had to be adjusted. Firstly, the business model included a focus on smaller research institutes and customers that were using optical microscopes which the new product could outperform with regard to the level of magnification. However, after operating the business model in the three countries the scope was adapted to potential customers that were familiar with electron microscopy but did not own an electron microscope. It appeared that this customer segment had a better fit with the other business model elements.

Although FEI used a certain level of experimentation, it could not prevent the business model from becoming unprofitable after full implementation. This was rooted in a misfit in the business model that, until then, was not sufficiently dealt with. From the start, several marketing resources, such as sales people and distribution networks were leveraged from the traditional business model to the new business model. For instance, for sales, the business model largely relied on FEI sales managers that were also selling the larger microscopes. Because of the large differences between the two business models with regard to value proposition and target market this appeared very difficult to combine.

4. Inbound open innovation when establishing a new business model

5. Outbound open innovation as new business model

This chapter discusses outbound open innovation as new business model. Additionally practices are discussed that were used to overcome three challenges in this specific situation:

- De-coupling technological knowledge;
- Developing alternative value propositions, and
- Establishing new customer linkages.

With regard to these challenges, specific attention is paid to the ‘not sold here’ attitude.

5.1 Outbound open innovation as new business model

In the case of outbound open innovation as a new business model, firms develop a new business model around the commercialisation of technical competences instead of selling a product or product-service combination. For instance, firms could build a new business model around selling patents or other types of external technology commercialisation opportunities. This could be done without, or in addition to, applying these technological competences in the firm’s traditional product businesses.

To develop a business model around technological knowledge as value propositions, firms often have to develop new ‘customer segments’ and new ‘distribution channels’ and ‘customer relationships’. Hence, it requires much more than mere technology transfer. An exemplar situation in which technical competences are commercialised in addition to their use in an existing product business is presented in Figure 6.

5. Outbound open innovation as new business model

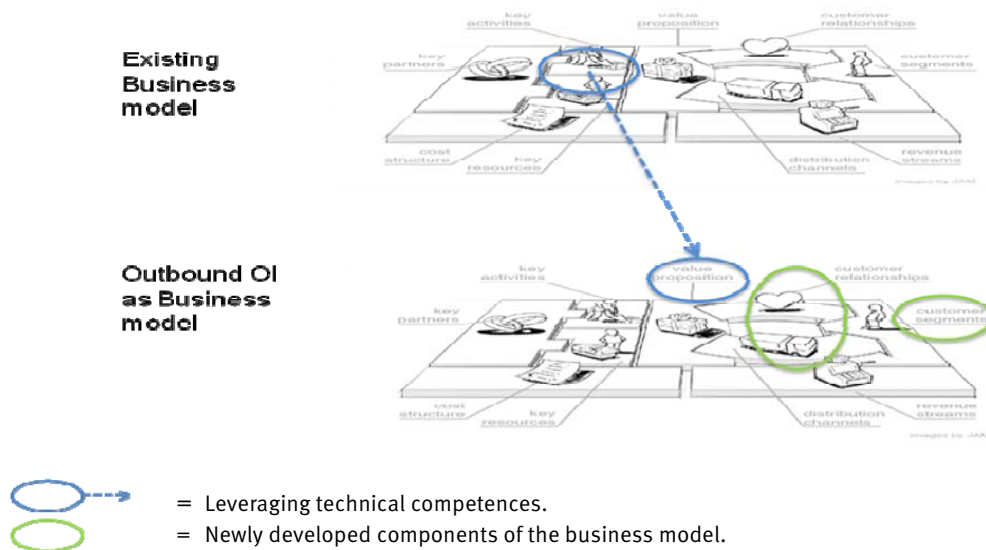


Figure 6: Establishing a new business model

Although outbound open innovation is much less widespread than inbound open innovation, some of the cases represent this specific situation: Philips and Van Gansewinkel. At Philips, the specific case of MiPlaza was researched. This unit provides research facilities and services for Philips Research groups and outside parties and is located at the 'High Tech Campus' science park in Eindhoven (HTCE). In 2011, this unit became part of Philips Innovation Services, a new organisation that offers a range of innovation services, expertise and high-tech facilities across the whole innovation process, and combines MiPlaza and several other units. At Van Gansewinkel, the case of materials and recycling consultancy services was studied. This new business was set up in the context of moving from a waste collector to an active player in the recycled materials industry.

5.2 De-coupling technological knowledge

The competence base of many industrial firms comprises technological competences from different technological areas that are usually integrated in different products. However, firms may also de-couple their technological competences from products and regard them as a separate value proposition [3].

De-coupling involves seeing technology in its own right, as distinct from just seeing it as a competence necessary to develop products [28]. As such, managers have to abandon a product-centric view of their operations and focus on individual technological competences. Doing so requires a cognitive change which does not always come naturally.

A way to gain a better grip on individual technology competences and support de-coupling is an on-going characterisation of their properties [28]. The core characteristics of these competences have to be understood before they can be turned into distinct value propositions. This can be done, for instance, by using reflection sessions and extensive internal communication to identify and categorise technological knowledge competences within the organisation (Example 15).

5. Outbound open innovation as new business model

Example 15: Technological knowledge characterization at Van Ganswinkel

The Dutch waste management organisation, Van Gansewinkel, was founded in 1964. Currently, Van Gansewinkel operates three main businesses: 'waste collection', 'recycling', and 'incineration services'. In 2011, the organisation had a turnover of around €1.2 billion and employed 6,500 people. Although the majority of Van Gansewinkel's activities are situated in the Netherlands and Belgium, the company also operates in Germany, Poland, the Czech Republic, Hungary, Luxembourg, France and Portugal. It holds the number one position in waste management in the Benelux region and is one of the top five in Europe.

Traditionally, Van Gansewinkel's core business has always been waste collection and processing. However, about 20% of turnover was generated by selling processed waste as a materials supplier. From 2006 onwards, slowly but surely, prices of raw materials rose as a result of increasing materials scarcity. For instance, in 2010, it was calculated that within the next 44 years oil would run out, and there was only enough silver for another 29 years. In this context, Van Gansewinkel increasingly realised that taking on the role of a recycled materials supplier would become more interesting. Developments in this direction became a valid alternative for the price wars going on in the waste collection segment.

In the context of focusing on recycled materials, Van Gansewinkel also started to provide consultancy services with regard to product recycling design for a variety of manufacturers. In this outbound open innovation model, Van Gansewinkel employees collaborate with product designers and product developers at manufacturers and bring design knowledge from the perspective of optimal recycling.

Before Van Gansewinkel was able to do this, it first had to characterise the type of technological knowledge competences that were available within the organisation. An important method of achieving this was the organisation of so-called 'knowledge cafes', cross-functional internal events in which technological knowledge was characterised and opportunities were discussed. Additional support for this was gained by the development of four materials clusters in 2009 (biogen materials (e.g. wood), minerals, plastics, and metals), which focused attention and supported the identification of specific technological competences.

As a result of explicitly characterising technological knowledge, Van Gansewinkel successfully contributed to developing the Philips Senseo Viva Cafe Eco coffee machine which was introduced into the market in 2011. 50% of this machine consists of easily recycled plastics from discarded coffee machines.

In addition to technological knowledge characterisation, firms may sometimes have to overcome a 'not sold here' attitude to implement outbound open innovation. Not sold here tendencies describe an organisational culture characterised by a negative attitude with respect to transferring and selling technology competences. This culture may result from the fact that many firms do not have that much experience with outbound open innovation, and a concern that the position of competitors may be strengthened by selling the 'corporate crown jewels'.

Similar to overcoming the 'not invented here' syndrome, some organisations have overcome not sold here tendencies by setting up targeted incentive schemes. For instance, Procter and Gamble has set up reward systems that value the identification of licensing opportunities [9]. In this way, 'not sold here' tendencies may be turned into 'sell-out' attitudes with regard to technology exploitation and buy-in may be created (Example 16).

5. Outbound open innovation as new business model

Example 16: Managing internal processes and buy-in at Philips

Around 2003, Philips started to embrace a strategy of open innovation with regard to research activities. It recognised that the explosion of complexity in electronics and applications, increasing financial risks and the increasing role of venture capital made innovation more and more costly, competitive and complex. It realised that, as a consequence, research and innovation was increasingly taking place within networks, partnerships, and alliances between different parties. Following this line of reasoning, Philips adopted several initiatives to change the way it organised research.

One of these initiatives was opening up several of its clean rooms and related research services to outside parties in addition to internal Philips research groups. In this way, Philips' senior management thought that they could better attract outside organisations, increasing the chances of forging fruitful partnerships. At the same time, sharing infrastructure meant more efficient use and, therefore, lower costs for Philips for keeping competences up to date. In June 2004, the clean rooms and related research services officially opened up for outside companies and research institutes under the brand name 'MiPlaza'.

Several initiatives were started to translate this strategic decision into practical operation, and to take the organization along with this change managing any 'not sold here' attitude. The first initiative was to explicitly develop a differentiated intellectual property policy, consisting of two types of IP: 1) strategic know-how and IP that has to be controlled to secure competitive advantages and therefore cannot be shared; 2) own know-how and IP that is non-differentiating and, therefore, can be shared in set-ups such as MiPlaza.

A second initiative was extensive internal communication across the R&D organisation with regard to the purpose of MiPlaza, and why it was considered to be important for the organisation as a whole. One of the indications that this was taken very seriously was the appointment of a specific MiPlaza communications manager. Finally, in 2006, official targets with coupled incentives were adopted with regard to the amount of work that had to be executed for outside parties.

5.3 Developing alternative value propositions

In addition to technological knowledge characterisation, firms have to put effort into developing alternative value propositions that arouse customer interest. In many cases, this is a challenging task. Markets for technology seem less transparent than markets for new products, which makes technology exploitation complex [29]. Additionally, the customers that are targeted in technology exploitation are often very different from the ones that buy firm products. As a consequence, firms need to develop new knowledge regarding customer needs, preferences, and purchasing procedures.

A way of overcoming this difficulty is conscious experimentation with ideas for new value propositions to define the role the firm can play with regard to technology exploitation. In this way, the firm may learn what specific elements of the technology are valuable for what type of customers (Example 17).

5. Outbound open innovation as new business model

Example 17: Experimenting with alternative value propositions at Philips

At the start-up of MiPlaza (2004) it was not specifically clear what its core value proposition should be. Therefore, from this period onwards, Philips started purposefully experimenting with the value proposition, being open to alternatives to the ones it had in mind. Among the initiatives for experimentation was a research project in which the organisation aimed to define its role in the R&D community of the Eindhoven region.

To be able to define its identity, MiPlaza conducted a stakeholder analysis, among other things, which identified the desired roles from the perspective of different stakeholders. Additionally, the organisation studied comparable organisations and how they dealt with defining their identity.

Among other things, it was found that MiPlaza should perform a ‘facilitator’ role which provides research facilities to clients, a ‘knowledge centre’ role, which provides insight into cutting edge information, knowledge, and ideas, and a ‘technical service provider’ role which includes acting as test centre, engineering office and analytical research centre. From 2006 onwards, when MiPlaza became a separate division within the Research organization, these roles were adopted within its strategy and a more explicit value proposition was built around them.

5.4 Establishing new customer linkages

A third aspect that may be challenging is getting access to customers for technology and negotiating favourable deals. Customers of technology offerings are often different from customers of regular value propositions. As a consequence, organisations that engage in outbound open innovation need to develop new customer connections, deal with new decision-makers, and focus on new parameters when educating potential customers and negotiating deals. For instance, when external technology exploitation concerns licensing it is critical to take industry standards into account and to gain access to external knowledge when active in cross-licensing. Additionally, to increase bargaining power, licensors may develop a ‘proof of concept’, for instance, by means of a prototype.

A way to deal with the challenges mentioned above is to hire external technology exploitation experts from outside the organisation. These may bring the necessary expertise to actually profit from outbound open innovation (Example 18)

Example 18: Hiring external technology exploitation experts at Philips

After two years in operation, MiPlaza got in contact with two large potential clients. Before, the organisation mainly worked with smaller clients, such as start-ups. This development accelerated a change in MiPlaza’s commercial approach. Before, MiPlaza technical specialists were supported in their dealings with clients by a single business development manager. While this manager was essential for starting the business there was a need for more heavyweight commercial support when negotiating larger contracts. In 2006 it was decided to set up a commercial team. Although hiring people with a talent for selling technology was a challenge the organisation managed to create this new team and appointed a seasoned sales manager to lead it.

5. Outbound open innovation as new business model

Another way of overcoming the challenge of establishing new customer linkages is giving technology experts inside the organisation the responsibility to support the traditional sales force when addressing outbound open innovation opportunities (Example 19).

Example 19: Sales support from technology experts at Van Gansewinkel

At Van Gansewinkel, technology sales were mainly conducted by sales managers that were also involved in other businesses. When this new model had been operated for a couple of years, an official restructuring took place with regard to Van Gansewinkel's support staff. This led to setting up the new 'Materials, Concepts, and Infrastructure' (MCI) department, which partly consists of a merger of several support departments and was based, in part, on developing new areas of attention. One of these was building up expertise in several pre-defined materials clusters, such as plastics. A major task for MCI members is the support of sales managers in selling this expertise and supporting customers in their design processes.

6. The process of change

This chapter discusses insights which were gained when explicitly studying the process of opening up an existing business model or developing a new business model which included applying open innovation.

6.1 Combining experimentation and planning

The activities of opening up or developing a new business model include both experimentation and planning. As was highlighted before, experimentation is important because adaptations in business models come with high levels of uncertainty and ambiguity. On the other hand, experimentation can only be successful if business models have been screened and uncertainties have been identified in brainstorming and planning sessions. A discovery driven planning approach [30] seems to fit business model developments. This approach is different from ordinary planning. In ordinary planning, the correctness of a plan is generally judged by how close projections come to outcomes. In discovery driven planning, stakeholders take the view that plans may change when new information is revealed, and plans are subject to change. In this planning approach, resources are allocated based on achieving milestones or checkpoints. In this way, resources are gradually released when the expectation of future success is rising. For instance, in the case of FEI, it was observed that the project team developed a business plan, but changed its customer segment focus along the way. Likewise, Bruns adapted its original working plan with a re-design partner after on-line experimentation of the new business model resulted in a situation in which this partnership became less valuable.

6.2 Unrealised and emerging benefits of applying open innovation

Dynamics in the benefits realised by applying open innovation in business models were uncovered when analysing the change process. At the start of applying open innovation in business models, firms have certain expectations of the benefits it will bring, such as faster access to new competences for innovation purposes than developing them in-house. However, the realisation of these benefits for innovating can only be assessed when innovations are fully implemented. In some cases, a discrepancy between the expected and realised benefits was found, in the sense that expected benefits could not be realised. For instance, in the case of Bosch, the organisation had a certain expectation of finding outside parties that could provide competences that the organisation was searching for in their innovation efforts; however, this appeared not to be the case. Conversely, sometimes unanticipated and emerging benefits may arise that were not foreseen at the outset of applying open innovation. For instance, in the case of Bruns, the new business model was fully developed because costs and risk could be shared with an outside partner through applying inbound open innovation. When realising this new business model, it appeared that its marketing competences, such as the new webshop, also appeared to be beneficial for the traditional business model, because, in addition to attracting customers for the new business model, it also was able to attract customers that were originally part of the traditional business model as well.

6. The process of change

7. Conclusions and summary

This report focuses on the interface between ‘open innovation’ and ‘business models’. Only looking at both of these conceptualisations simultaneously results in a focus on value creation and appropriation when working with outside parties for innovation purposes. The aim of the report is to provide insight into the challenges of developing and executing these ‘open business models’, and how firms are dealing with these challenges.

The report was structured by distinguishing three typical situations of applying open innovation within business models:

- Inbound open innovation to enhance an existing business model;
- Inbound open innovation when establishing a new business model;
- Outbound open innovation as a new business model.

Based on the data analyses, three challenges per situation were uncovered. Also the data could be used to illustrate how firms dealt with these challenges³. In this way, the report provides insights for other firms that want to work with open innovation and implement open business models, and establishes a link between open innovation and value creation and appropriation. By including the business models in which open innovation is applied, the report explicitly considers how firms can profit from applying open innovation. On the other hand, we inform managers that are already familiar with business models about ways in which they can create additional value by working with outside parties.

The table below summarises the potential challenges and solutions encountered when establishing open business models (Table 4). Based on these insights, a workshop has been developed to better link theory with practice.

³ Although insights are based on a cross-case analysis, they are based on studying 10 cases. Additional research is necessary to further validate these insights.

7. Conclusion and summary

Table 4: Summary of findings

Type of OI/Type of business model change	Challenge	Solutions	Case examples
Inbound/ Enhancing	Searching for resources and competences	<ul style="list-style-type: none"> Using intermediaries Platforms to produce and share knowledge Gatekeeper roles and departments 	Bosch (1) MechaniCo (2)
Inbound/ Enhancing	Acquiring resources and competences	<ul style="list-style-type: none"> Negotiate explicit contract and licensing agreements Organize means for knowledge transfer Building confidence with partners 	Bosch (3) Bodegas Ochoa (4)
Inbound/ Enhancing	Assimilating resources and competences	<ul style="list-style-type: none"> Adapting incentive systems Discovering additional benefits Establishing cross-functional interfaces 	Bodegas Ochoa (5) MechaniCo (6)
Inbound/ Renewal	Developing ideas for new business models	<ul style="list-style-type: none"> Bringing in outsiders Reinforcing open minded attitudes through leadership Implementing new business functions and departments 	Bruns (7) Freños Iruna (8) FEI (9)
Inbound/ Renewal	Establishing and maintaining connections	<ul style="list-style-type: none"> Establishing and monitoring competence, strategic and relational fit 	Ingeteam Energy (10) Kugler-Womako (11) Bruns (12)
Inbound/ Renewal	Aligning competences	<ul style="list-style-type: none"> Mapping the organisational structure Experimentation 	Freños Iruna (13) FEI (14)
Outbound	De-coupling technological knowledge	<ul style="list-style-type: none"> Using reflection sessions and extensive internal communication Adapting incentive systems 	Van Gansewinkel (15) Philips (16)
Outbound	Developing alternative value propositions	<ul style="list-style-type: none"> Experimentation 	Philips (17)
Outbound	Establishing new customer linkages	<ul style="list-style-type: none"> Hiring external technology exploitation experts Implementing sales support 	Philips (18) Van Gansewinkel (19)

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Appendix 1: Overview of the research methodology

This appendix presents the research methodology that was used to collect the data and develop the findings.

In setting up the ‘Business Models for Open Innovation’ project proposal, it was decided to study 10 cases across the geographical areas of project partners (Eindhoven, Navarre, and Stuttgart).

Case study selection criteria

Per region, the following case selection criteria were applied:

- Three or four case organisations have to be studied.
- When studying a large organisation, try focusing on a specific business as focal organisation.
- Organisations should be established organisations.
- Organisations should have a significant presence in the region under study.
- Organisations should have adapted their business model or developed a new business model in addition to existing ones using open innovation.
- New business models that are innovative for a sector, or novel business models in comparison with sectoral competitors are preferred.
- Some output should be realised by the changed business model, such as a tangible product or turnover.
- Organisations can be business-to-business (B2B) firms or business-to-consumer (B2C) firms. B2B is defined as commercial transactions between businesses, such as a component supplier and an Original Equipment Manufacturer. B2C is defined as commercial transactions between businesses and consumers. (In a lot of instances, where a retailer is involved as middleman between business and consumers, one could also call this B2C.)
- Organisations can be active in traditional sectors (e.g. wine-making), or novel sectors (e.g. wind energy).
- Organisations can be SMEs or large organisations.

Data sources

The study aimed to collect rich and high quality data for each case study. In so doing, it followed the principles of ‘triangulation’: obtaining data from multiple independent sources of information for controversial or key issues. Interview data, as well as other data sources, were included.

Interviews

- The aim was to carry out several interviews per case study, and record and transcribe them.
- In addition to interviewing members from the focal organisation, the study aimed to include interviews with members from other organisations participating in the focal organisation’s (new) business model, such as customers, complementors, or competitors.

Other data sources

- The study aimed to include internal archival data (e.g. project plans on business model renewal, minutes of meetings, overviews of revenues, sales, income, costs, market share, number of employees, organisational charts, presentations, patents, websites, annual reports etc.) and some external archival data (e.g. (newspaper) articles, analyst reports, books).

Per case study, on average, 5 interviews were carried out and multiple additional data sources could be collected.

Appendix 1: Overview of the research methodology

Interview guide

An interview guide was developed for executing the interviews. This guide contained many questions, which were not all applicable to all case studies and to all interviewees, but provided a long-list with possible questions to draw upon, and could be adapted and used as a checklist while interviewing.

The theoretical background of the interview guide is provided by literature on business models, open innovation, and organisational change processes.

The interview guide was structured around the following topics:

- (1) Introduction;
- (2) Background interviewee;
- (3) General information on the organisation;
- (4) Business model change initiative (process overview);
- (5) Management of the change initiative;
- (6) Business model components (BMC): value proposition(s);
- (7) BMC: Customer segment(s);
- (8) BMC: Channels;
- (9) BMC: Customer relationship(s);
- (10) BMC: Revenue stream;
- (11) BMC: Key resources;
- (12) BMC: Key activities;
- (13) BMC: Key partnerships;
- (14) BMC: Cost structure;
- (15) Governmental policies;
- (16) Open innovation;
- (17) Future and sustainability of the enhanced/new business model.

Data analyses and reporting

As an important tool for the data analyses, an event sequence file was used: an inventory of influential events in the history of applying open innovation within a firm's business model. Based on this file and existing theory, data was coded by multiple members of the research team, including researchers who had been involved in data collection for the specific case study and researchers who had not yet been involved with it. After these within-case analyses, a cross-case analysis was performed, to identify persistent challenges and solutions.

For uniform reporting per case study across the three regions, the following reporting structure was used:

- Overview organisation;
- Original business model(s);
- New business model;
- Business model renewal process;
- Management of the business model renewal process;
- Specific role of open innovation;
- Policy influences;
- Future and sustainability of the business model.

Appendix 2: Systematic overview of the 10 cases

This appendix presents short overviews of the cases that were studied.

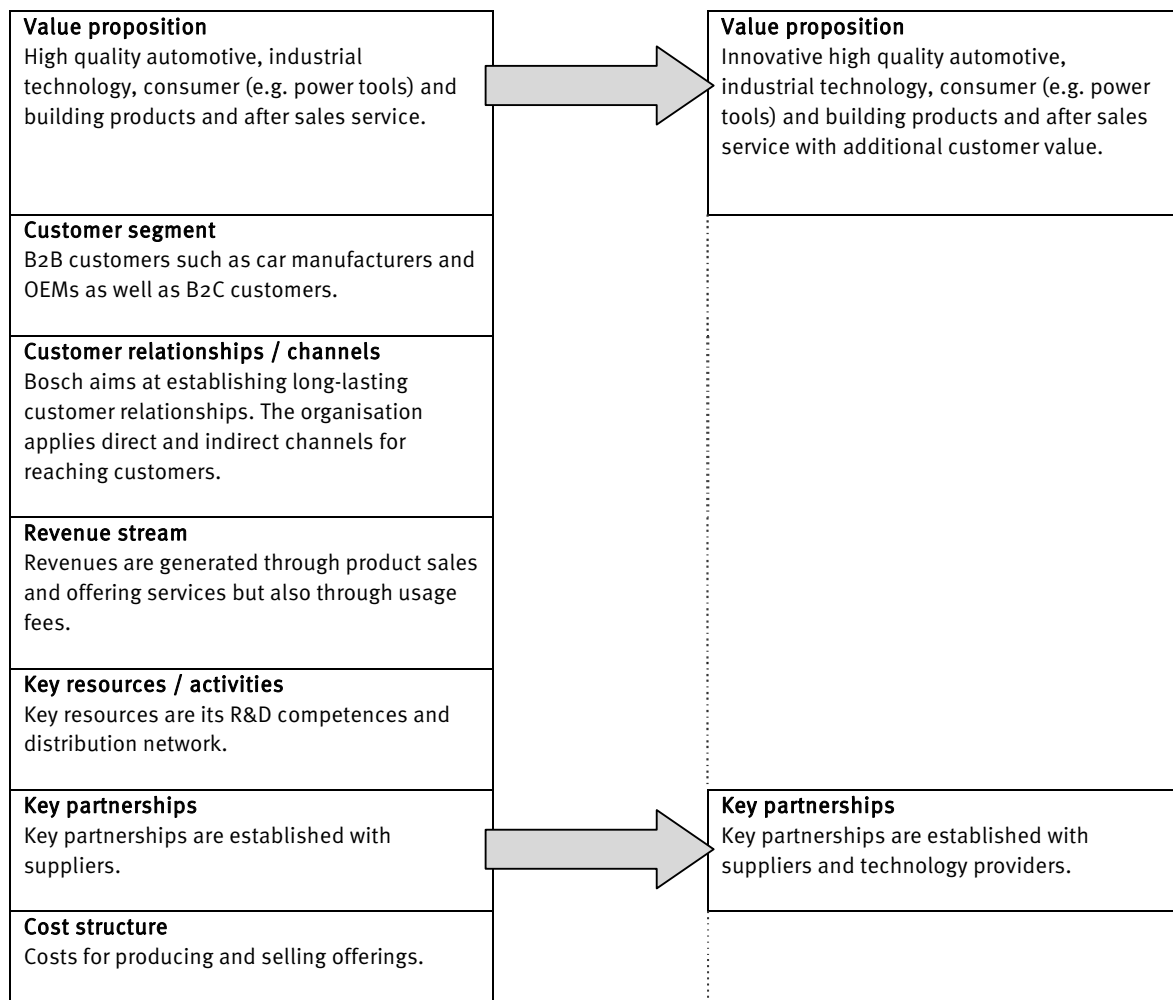
Three cases fit the specific situation of inbound open innovation to enhance an existing business model: Bosch, MechaniCo, and Bodegas Ochoa.

Bosch

Bosch is a large organisation based in Gerlingen, Germany. In 2011, the organisation generated a turnover of €51 billion, of which 8% is reinvested in research and development. In the same year, it celebrated its 125th anniversary and it had more than 300,000 employees.

Traditional business model
(aggregated level)

Main changes enhanced BM⁴



⁴ Change in the 'key partnerships' and 'value proposition' components also triggered some change in other elements such as key resources / activities and costs structure (often, the partners had to be paid). However these were relatively smaller changes and occurred as a consequence of changing the key partnerships and value proposition elements, which we focused on in this analysis. This concerns all 'inbound/enhancing an existing business model' cases.

Appendix 2: Systematic overview of the 10 cases

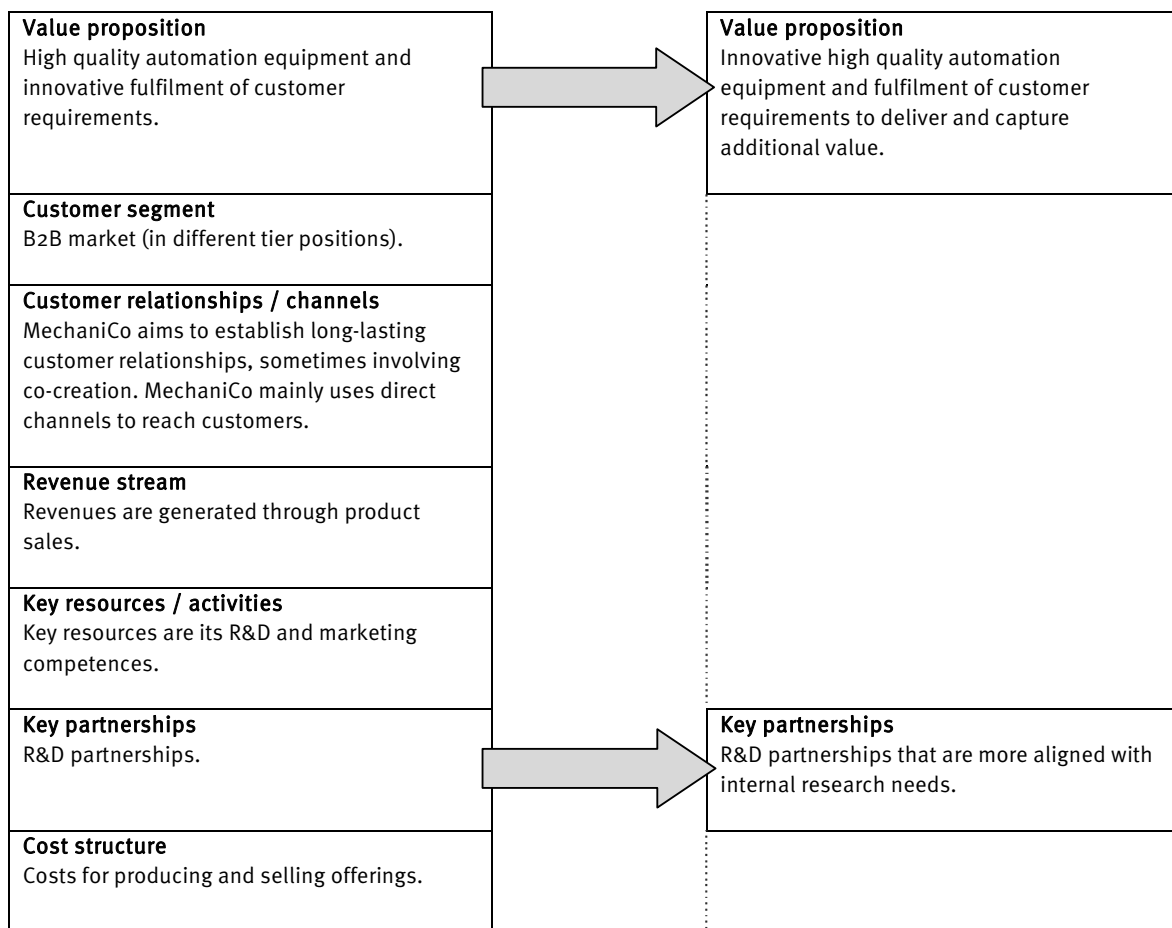
Bosch opened up existing business models by partnering with intermediary platforms such as NineSigma and Yet2Com to apply ‘crowdsourcing’ with regard to R&D. These intermediary platforms support, and give advice in, articulating internal Bosch research problems and are actively involved in searching for new potential R&D partners that may have a solution for the problems formulated. In this way, additional product attributes can be developed that have customer value, and its business models can be enhanced. The platforms are also involved in a pre-evaluation of potential solutions. The opening up initiative started in 2009. In two pilot projects, no ‘solution partners’ could be found. However these projects have put in place the groundwork, such as processes for dealing with contracts between Bosch and the intermediary platforms that could be used in follow-up projects. At this moment, the method of using crowdsourcing has spread throughout Bosch R&D departments.

MechaniCo

MechaniCo is a leading provider of pneumatic and electrical drive technology for factory and process automation. The company was founded in 1925. In 2011, the organisation had a turnover of €2.1 billion and a worldwide workforce of around 15,500 employees. In 2011, it invested 9% of turnover in R&D. The headquarters of the company can be found in Germany.

Traditional business model
(aggregated level)

Main changes enhanced BM



Appendix 2: Systematic overview of the 10 cases

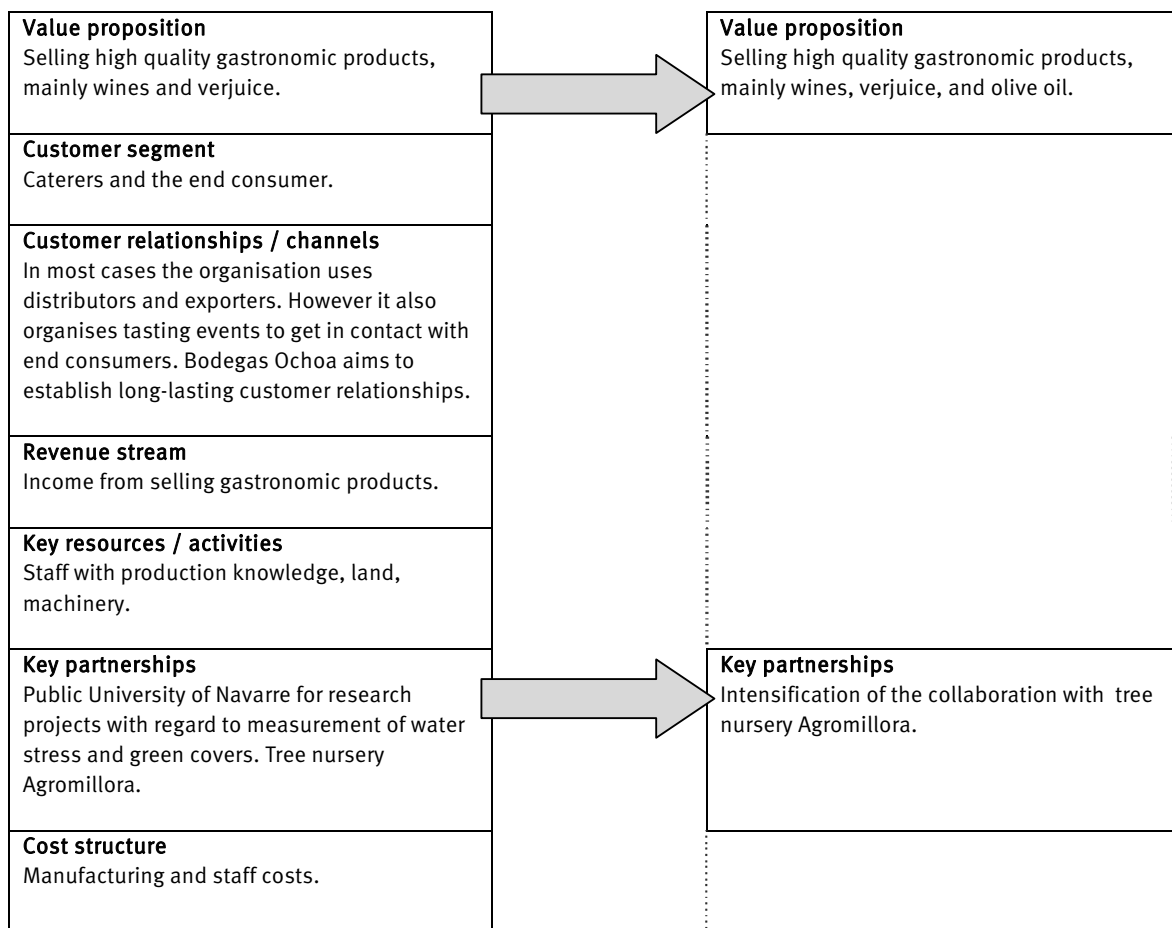
MechaniCo further opened up its existing business models by establishing a specific network and cooperation management department. This department improved the organisation and coordination for participating in outside, publicly-funded, research projects. In this way, MechaniCo research priorities and the publicly-funded research were better aligned and better R&D partners could be found, improving inter-organisational R&D. The opening up initiative started around 2007. At the moment, the success of the initiative is hard to measure. However, senior management is convinced of its value and want to expand it internationally.

Bodegas Ochoa

Bodegas Ochoa is a family run winery with a history dating back more than six centuries. In 2011, the organisation had an operating income of about €3 M and employed 17 people. It is located in Olite, Spain. Bodegas Ochoa operates a gastronomic business model in which it sells wines and cooking condiments. The organisation opened up its business model when developing a distinct type of olive oil which could complement their current product portfolio. In this way, the organisation was able to offer a wider variety of products, which were specifically valued by distributors, and, thus, enhance value creation and appropriation.

Traditional business model
(aggregated level)

Main change enhanced BM



Bodegas Ochoa further opened up its gastronomic business model by intensifying its collaboration with tree nursery Agromillora, as partner for joint experiments with regard to growing olive trees and

Appendix 2: Systematic overview of the 10 cases

developing new varieties of olives. This was triggered by expanding its portfolio of offerings. In the traditional model, Bodegas Ochoa offered wines and verjuice, a cooking condiment made from unripe green grapes. In order to make better use of its land and better serve its customers, Bodegas Ochoa thought about complementing the wines and verjuice with olive oil. However, because of a change in raw materials, from grapes to olives, the organisation needed additional expertise when developing the new product, which they found in the Spanish firm Agromillora, the largest nursery in the world in this specific field. The firm had been collaborating with Agromillora for a long time when enhancement of the business model took place. The mutual trust built over the years had a positive impact on the change process. The olive tree plantation started in 2003 and, in 2006, the new olive oil product was able to be commercialised. At this moment, the two parties are working on experiments to develop new varieties of olives.

Appendix 2: Systematic overview of the 10 cases

Five cases fit the specific situation of inbound open innovation when establishing a new business model: FEI, Bruns, Ingeteam Energy, Frenos Iruña, and Kugler-Womako.

FEI

In its current form, FEI is a public limited American supplier of electronic microscopy tools, and operating and application software for researchers, developers and manufacturers working to characterise, analyse, and manipulate structures on the nano-scale. The organisation is a result of a merger between FEI Company and Philips Electron Optics in 1997. In 2010, the organisation employed 1,788 people, had a turnover of \$634 M, and a profit of \$54 M. FEI's headquarters are located in Hillsboro, Oregon where it also maintains an R&D and manufacturing centre. Its European headquarters, which also includes R&D and manufacture, are located in Eindhoven, in the Netherlands.

Traditional business model (aggregated level)

Value proposition High-end microscope systems (large, complex, and expensive) / focus on performance / high end service.
Customer segment Leading nano-scale research institutes, national laboratories, and companies.
Customer relationships / channels Own sales force / distributors / agents. Aimed at building long-term relationships.
Revenue stream System sales and service agreements.
Key resources / activities R&D / manufacturing / marketing and sales of low volume high-end complex microscope systems.
Key partnerships Distributors / agents.
Cost structure Sales = 100% Costs of sales = 58% Other costs = 32% Operating income = 10%.

New business model

Value proposition Small, easy to use, affordable table-top microscope systems / low cost service.
Customer segment Schools and companies that do less sophisticated research.
Customer relationships / channels Own sales force / distributors / agents (others than in the traditional business model). Long-term relationships less important.
Revenue stream System sales and service agreements, and risk/reward arrangement with suppliers.
Key resources / activities R&D / manufacturing / design / marketing and sales of mid-volume microscope systems.
Key partnerships Suppliers (risk-reward model) / distributors / agents.
Cost structure Gross profit percentage is similar; however, sales numbers should be higher than in the old model to cover overhead costs.

Based on developments in miniaturization in the 1990s, the idea emerged in a FEI brainstorming session to develop a general purpose table-top electron microscope. This was a totally different product to what they usually made and was to be targeted at a different market. Basically, it was a low cost/low performance version of the existing product portfolio. It was targeted to fill the gap between light

Appendix 2: Systematic overview of the 10 cases

microscopy and electron microscopy with regard to performance. Only in 2002, when the semiconductor market, a large target market for FEI, was experiencing a downturn was this idea picked up again for diversification purposes. Because of the change in value proposition and target market, several resources and activities also had to be renewed. While the organisation aimed to develop new customer relationships and channels by itself, it leveraged its core technology from the existing business and relied on partnerships for bringing in mid-volume manufacturing competences and additional development knowledge. These partners were paid by applying a 'risk-reward model'. Every time FEI sold a system, the suppliers received a percentage of the selling price. In this way, risks and rewards were shared. The new product was introduced into the market in 2006. However, FEI experienced difficulties in scaling up the business. The new product did not really fit with FEI's culture and new channels and customer relationships were hard to build. Eventually, the business was sold to a supplier in 2009, with FEI still owning 19%. The new owner is now building up new sales channels and customer relationships, which have already increased sales.

Bruns

Bruns is a production and engineering company for exhibitions in museums, information and science centres and a creator of presentation models and blow-ups. It is organised around projects in which the organisation works closely with customers and design agencies. In 2011, Bruns had a turnover of almost €12 M and had around 70 employees. The organisation was founded in 1963 and its headquarters are based in Bergeijk, in the Netherlands.

Appendix 2: Systematic overview of the 10 cases

Traditional business model (aggregated level)

Value proposition Engineering, producing, and delivering interactive tailor-made exhibits, often with extensive after sales service, and project management responsibilities.
Customer segment Large museums, science centres, visitor centres, and travelling exhibitions.
Customer relationships /channels Working on projects, mainly direct face-to-face contact with customer.
Revenue stream Getting paid for executing a project; sometimes some revenue flows to partners that are involved such as designers.
Key resources / activities Project management, engineering, manufacturing, and marketing and sales.
Key partnerships Designers and design agencies.
Cost structure Turnover: 100%; Costs of turnover: 59%; Indirect costs: 39%; Net income: 2%.

New business model

Value proposition Producing and delivering standardised, simple, and shockproof exhibits, with limited after sales service, and often not in the context of specific projects or exhibitions.
Customer segment Smaller museums and science centres, but also shopping malls and amusement parks.
Customer relationships /channels Online catalogue and e-mail / telephone. Exhibits are sent by post.
Revenue stream Getting paid for sending a standardised exhibit. Sometimes some revenue flows to the customers of the original model, with whom the exhibit was co-designed.
Key resources / activities Manufacturing, re-designing, and marketing and sales.
Key partnerships Several customers of the traditional Bruns business model (in about 10% of the cases), and a design agency to do the re-design and promotion.
Cost structure New model has higher margins than old model.

The plan for the new business model was to sell exhibits for which the idea was already developed and the product was already manufactured by operating the original Bruns business model. Thus, the company could sell the output of their ‘one of a kind’ projects in standardised and low costs form more than once. Hence, technical competences were leveraged from one business model to the other. To set up this business, some other business model components besides the value proposition had to be changed. Bruns had to renew its customer relationships and channels (e.g. building a web-shop) because the low cost exhibits were targeted at different customers than the products from the traditional business model. Additionally, they needed re-design competences for turning very specific one of kind exhibits into more standardised exhibits. This latter act of renewal was carried out in partnership with a design agency, which became part of the business model and owned 50% of the business. The new business was officially launched in 2006 and, at this moment, about 10% of Bruns’ turnover comes from this business. Along the way, it appeared that the specific value of competences provided by the design agency was decreasing, leading to Bruns taking full ownership of the business in 2010. A specific feature of the new business model is that some exhibits were originally developed together with customers. When these exhibits are now sold via the standardised exhibits model, these original customers still receive a certain percentage of the selling price.

Appendix 2: Systematic overview of the 10 cases

Ingeteam Energy

Ingeteam Energy is mainly active in the wind power, solar photovoltaic, solar thermal, hydroelectric, biomass, and biofuel sectors. It designs and manufactures converters, electric generators and control equipment for these areas and offers comprehensive solutions for the development of electric power plants using renewable energy resources. Ingeteam Energy is part of the Ingeteam corporate group which also focuses on electronic equipment in other sectors such as marine and railways. In 2010, Ingeteam Energy had a turnover of around €87 M and employed 91 people. The business was founded in 1995 and has its headquarters in Sarriguren, Spain.

Traditional business model (aggregated level)

Value proposition Tailor-made electronic systems for wind turbines, and after sales service.
Customer segment A small niche market of wind turbine manufacturers that value the latest technology.
Customer relationships / channels Personalised and direct relationships.
Revenue stream Sales of products.
Key resources / activities R&D and manufacturing competences.
Key partnerships Universities, technical centres and a small number of clients.
Cost structure Costs of developing the products.

New business model

Value proposition Selling standardised products and components.
Customer segment A wide variety of clients in the wind energy market that want to buy standardised products and components.
Customer relationships /channels Relationships are not personalised.
Revenue stream Sales of products.
Key resources / activities R&D, manufacturing, marketing and supply-chain competences.
Key partnerships Universities, technical centres, and prescription engineers.
Cost structure Costs of developing the products.

While the original Ingeteam Energy business model was built around offering tailor-made electronic systems for wind turbines, the new model focuses on selling standardised products and components to the wind energy market with far less intensive customer relationships. The plan for the new business model was based on the firm's desire to avoid the risks that excessive dependence on a small number clients could involve and to capture opportunities in a steadily-growing market. In the new business model, the value proposition became less customised and was targeted at a wider variety of customers. Although technological competences could be leveraged from the original business model to the new model, the firm had to develop several new competences to fully realise the business model renewal trajectory, such as developing new customer relationships and channels and hiring local agents to customise facilities to foreign markets. Some of these competences, however, could be realised and tapped into by using (new) partnerships. New partners included prescription engineering firms that act as intermediaries between Ingeteam and new clients, and often define the technical specifications for the wind turbine manufacturers. However, traditional client partnerships were also of high value to focus the design of the value proposition, as was the collaboration with INGEPER, a research group from the

Appendix 2: Systematic overview of the 10 cases

Public University of Navarre. The new business model has been in operation since 2009, and, today, Ingeteam has opened facilities in China, the USA, and Brazil.

Frenos Iruña

Frenos Iruña is a company that designs, develops and manufactures brake component systems for the automotive industry. It is a worker-owned company founded in 1958 and located in Pamplona, Spain. In 2010, the company had a turnover of around €8 M and employed around 77 people.

Traditional business model (aggregated level)

Value proposition Offering brake components; Capable of delivering short series.
Customer segment Automotive suppliers. Specifically the off-highway segment and automotive after-market.
Customer relationships / channels Customer relationships are maintained through fairs and agents.
Revenue stream Sales of products.
Key resources / activities R&D, manufacturing and marketing competences to develop and sell own brake system designs.
Key partnerships Mainly automotive suppliers in co-creation projects to incorporate the components and technology in brakes, and universities for research.
Cost structure Costs of developing the products.

New business model

Value proposition Offering brake systems for wind turbines.
Customer segment Wind turbine manufacturers / clients in the wind energy sector
Customer relationships / channels Customer relationships are maintained through fairs and agents.
Revenue stream Sales of products.
Key resources / activities R&D, manufacturing and marketing competences to develop and sell brakes for wind turbine systems.
Key partnerships Universities and technical centres for research, new customers for co-creation and a firm for manufacturing competences.
Cost structure Costs of developing the products.

The impetus for developing the new business model was to focus on diversification because the company intended to take advantage of new business opportunities and avoid the risk of relying solely on stakeholders within the automotive sector. In the new business model, the organisation focused on the wind power industry by developing a new value proposition that was targeted towards a new group of clients. Although some technological competences could be leveraged from the original business to the new business, several new competences had to be developed in the field of manufacturing and marketing. To some extent, these additional competences were included in the business model by working with partnerships. For instance, the CITEAN Technological Centre specialised in the development of technology for the automotive industry and a traditional collaborator provided the firm with the adequate test bench to validate the new brake systems for the wind-power turbines. Also clients, suppliers and other companies played an important role in developing the necessary competences of the

Appendix 2: Systematic overview of the 10 cases

Frenos Iruña wind power division. The new business model was put into operation in 2005. At the moment, the new business is reinforcing the traditional one and is bringing in additional revenue.

Kugler-Womako

Kugler-Womako provides machines for the printing and paper processing industry and is part of Körber AG. Kugler-Womako's roots can be traced back to 1962. In 2011, the organisation had a turnover of €21 M and employed 94 people. The company invests 5% of turnover in R&D. Kugler-Womako has its headquarters in Nürtingen, Germany.

Traditional business model (aggregated level)

Value proposition Customised machines for the paper and paper processing industry.
Customer segment Companies in the printing and paper processing industry.
Customer relationships / channels Direct, often long term, relationships with customers.
Revenue stream Sales of products and service contracts.
Key resources / activities Design competences and customer relationships.
Key partnerships Suppliers of modules and an engineering service provider that takes on construction tasks.
Cost structure Costs of developing the products.

New business model

Value proposition Customised machines to produce wire-mesh for door seals.
Customer segment Automotive suppliers.
Customer relationships /channels Direct relationship, strong focus on co-creation.
Revenue stream Sales of products.
Key resources / activities Design competences and laser-welding capabilities.
Key partnerships The customer with regard to co-creation. A provider of laser welding competences.
Cost structure Costs of developing the product.

Because of ongoing digitalisation of security documents, Kugler-Womako's most important market segment in the printing and paper processing industry was declining. Therefore, the company was searching for a diversification in markets. In 2009, the company had the chance to move into the automotive industry. With their technology, they were able to develop a machine that could develop high quality wire-mesh for door seals. Although some technological competences could be leveraged from the original business to the new business, several new competences had to be developed. For instance, the organisation needed to develop new customer relationships and was in need of laser welding technology that was not used in the traditional business model. By means of a partnership with an automotive OEM, and by collaborating with a new supplier, Kugler-Womako was able to tap into these competences. At the moment, the parties collaborate well and Kugler-Womako is working hard to put the new business model into operation.

Appendix 2: Systematic overview of the 10 cases

Two cases fit the specific situation of outbound open innovation as a new business model: Philips and Van Gansewinkel.

Philips

Royal Philips Electronics, more commonly known as Philips, is one of the largest electronics companies in the world. The company was founded in 1891. In 2011, its sales were around €23 billion and the company employed 125,000 people in over 60 countries. Philips' headquarters are based in Amsterdam, the Netherlands.

Traditional business model (aggregated level)

Value proposition Healthcare electronics (e.g. imaging systems) and services / consumer lifestyle products (e.g. shavers) / lighting products and projects.
Customer segment Wide variety of OEMs, other business customer and end consumers.
Customer relationships / channels Direct channels / through retailers.
Revenue stream Mainly income from selling goods.
Key resources / activities R&D / manufacturing / marketing and sales.
Key partnerships Consumer lifestyle: co-development partners from FMCG industry such as Nivea and DE / also suppliers.
Cost structure Sales = 100% Costs of sales and other costs = 91% Income from operations 9% (on average).

New business model

Value proposition Research services: 'With you' = co-creating new technologies. 'For you' = Developing models and prototypes. 'You' = Renting out cutting edge lab space.
Customer segment R&D community in the fields of micro-systems, nano-technology, life sciences, and electronic system, such as other large companies, start-ups, and research institutes.
Customer relationships / channels Direct channels.
Revenue stream Income from selling research services.
Key resources / activities R&D facilities and expertise / marketing and selling research services.
Key partnerships Equipment and tool suppliers.
Cost structure Cost of investments in research facilities. Philips has to invest several millions a year to keep research facilities up to date.

For Philips, rising R&D costs and the idea to build an eco-system of innovative companies were important triggers for opening up its research support departments to outside parties. Thus, a new business model was created: technological competences became new value propositions targeted at a new set of customers. To build a strong business model, Philips had to invest in developing new customer relationships and marketing competences. In addition, it became more important to keep technological competences up to date. To achieve this requirement, the organisation, among other things, managed to work together with equipment and tool suppliers. Philips offers these suppliers the opportunity to

Appendix 2: Systematic overview of the 10 cases

demonstrate and test new features and tools with a wide range of demanding customers, gain application know-how, and access to other Philips research services and facilities. In return, Philips can offer the customers of this new business model state-of-the-art equipment at competitive prices. Research services were opened up in 2004. At this moment it is still recognised that working for others increases efficient use of the research infrastructure and brings new knowledge that can be used in future innovation efforts. Therefore, Philips will continue to operate the new business model in the near future.

Van Gansewinkel

Van Gansewinkel is a Dutch waste management organisation that was founded in 1964. In 2011, the organisation had a turnover of €1.2 billion and employed 6,500 people. It holds the number one position in waste management in the Benelux region and is one of the top 5 in Europe. The organisation's headquarters are situated in Eindhoven, in the Netherlands. In this case, the focus lies on the new business model of providing consultancy services with regard to product recycling design for a variety of manufacturers. In this outbound open innovation model, Van Gansewinkel employees collaborate with product designers and product developers working for manufacturers and bring design knowledge from the perspective of optimal recycling.

Traditional business model (aggregated level)

Value proposition Collecting sorting and processing waste.
Customer segment Households via municipalities, and companies.
Customer relationships / channels Direct channels.
Revenue stream Payments for waste collection and processing.
Key resources / activities Marketing/sales, a dense logistics network, machinery to separate waste, and contracts with reliable downstream waste processing companies.
Key partnerships Specialised downstream waste processors that further process waste streams that are not processed by Van Gansewinkel itself.
Cost structure Based on EBITDA (so without depreciation and amortisation costs) overall costs represented 77% of turnover in 2010.

New business model

Value proposition Offering consultancy services with regard to design for recycling.
Customer segment OEMs and other manufacturers of products.
Customer relationships / channels Direct channel, co-creation of value together with customers.
Revenue stream Income from selling consultancy services.
Key resources / activities Materials and recycling knowledge / marketing and selling research services.
Key partnerships Collaboration with knowledge partner EPEA.
Cost structure Costs of marketing and sales and keeping technological knowledge up-to-date.

Appendix 2: Systematic overview of the 10 cases

Van Gansewinkel started the new business model to capture a market opportunity tied to the development of an increased awareness and emphasis on the environmental friendliness of new products. Additionally, the new business was started to influence the characteristics of waste streams. Because the organisation could provide input with regard to material use and recycling they decreased the efforts needed to process waste within the traditional waste collection business model. Furthermore, customers of the traditional business model could become customers of the new business model and vice versa. While materials and recycling knowledge could be leveraged from the traditional business model to the new business model, this could be kept up to date by, among other things, collaborating with knowledge partner Environmental Protection Encouragement Agency (EPEA). Additionally, to fully develop this new business model, the organisation had to develop new customer relationships and consultancy skills. The new business model was started around 2008. To date, Van Ganswinkel has contributed to the development of several new products.



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